

760-1
5

A
SEVENTH, EIGHTH AND NINTH
LETTER

TO SIR JOSEPH BANKS Baronet

President of the Royal Society,

ON THE

Subject of Cochineal Insects, discovered at Madras,

By JAMES ANDERSON M. D.

With a Copper Plate Engraving Annexed, of the different INSECTS mentioned in the Letters, from the Drawings of BARON REICHEL.

Also an Engraving of the *Opuntia Major Spinulis obtusis mollibus, & innocentibus*, and the Plan of a Nopalry in the Bishopricks of Guaxaca in the Kingdom of Mexico, Extracted from the Second Volume of SIR HANS SLOANE'S HISTORY OF JAMAICA, for the use of Country Gentlemen who may be disposed to make Plantations, and are not in possession of that Work.

————— MILESIA MAGNO
VELLERA MUTENTUR, TYRIOS INCOCTA RUBORES.
VIRG. GEOR. LIB. 3.

MADRAS: Printed by CHARLES FORD.

MDCCLXXXVII.

U. S. DEPARTMENT OF AGRICULTURE

ATTACHMENT

OF THE REPORT OF THE

COMMISSIONER OF THE

LAND OFFICE

TO THE HOUSE OF REPRESENTATIVES

IN SENATE CONFIRMATION



TO SIR JOSEPH BANKS Baronet
President of the Royal Society.

DEAR SIR,

I HEREWITH send a Copy of Six Letters I did myself the honor to address you, on the discovery and culture of Cochineal insects here, together with a duplicate of the original drawing, which BARON REICHEL having had more leisure to execute, has, if possible, rendered more perfectly descriptive.

I likewise enclose two drawings of the *Naga Calli* or *Cactus Opuntia* I am attempting to cultivate, seeing I have not yet been able to find the *Cactus Cochinitifer*; the drawings are taken from branches of the plant.

I must likewise observe the natural description the *Tamul* name of this plant conveys; *Naga* being the proper name of the *Coluber Naga*, to the neck of which, when irritated, this *Opuntia* bears a near resemblance, and *Calli* the general appellation of any succulent plant, so they have their *Chaddera Calli*, *Yella Calli*, *Runna Calli* &c

Fort St. George
May 29th 1787.

I am with esteem,

Dear Sir,

Your very obedient Servant,
JAMES ANDERSON.



TO SIR JOSEPH BANKS Baronet
President of the Royal Society.

DEAR SIR,

AN opportunity offering of a dispatch for Europe by the way of Bengal, I enclose a compleat Copy of the communication I have made here to all Persons I judged likely to promote the culture of Cochineal in this country, and although those who have gardens found many of their *Guava* trees covered with *Coccus* insects, which the perusal of these letters had led them to observe, yet candour obliges me to acquaint you, not a vestige of them is now discernable even under ground.

The devastation made by the Ants, and boisterous South Easterly winds, are the most ostensible causes of their destruction; and it is likewise probable the parching land-wind and heat of the season has diminished the succulency of the plants, so much as to deprive the insects of nourishment.

I Have

I Have no doubt however, although hidden from my researches, some have escaped safe, and will multiply and come in review after the approaching wet season.

To obviate the ill effects of the winds, I expect to get plantations made in more sheltered situations amongst the great range of hills at Vellore Sautgurry and Amboor.

The *Chloroon* has suffered nearly the same fate, as very few of them are to be found; the grass to which they attach being greatly parched with the drought.

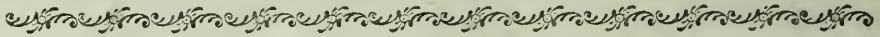
I have however the pleasure to observe the experiment I mentioned, April 26th has succeeded, and the back of the leaves of the *Menispermum cordifolium* are many of them covered with *Coccus* insects of a deep red colour.

Fort St. George
July 18th 1787.

I am with esteem,

Dear Sir,

Your very Obedient Servant,
JAMES ANDERSON.



TO SIR JOSEPH BANKS Baronet
President of the Royal Society.

DEAR SIR.

THE Tamul Advertisements I caused to be published, being only understood in the neighbourhood of Madras, where the Grass and Vegetables have been chequed during the late dry season, very few of the *Chloroon* insects are to be found, and these of so small a size they are not worth collecting.

Nevertheless, I have the pleasure to acquaint you, that Mr. DUFFIN, head Surgeon at Vellore, although eighty miles from the Sea Coast, has found some of the grass insect there, and Mr. YOUNG at Ongole, has caused the Advertisements to be translated from the *Tamul* into the *Talinga* Tongue, which is spoken here as far North as the frontiers of *Cattac*, a space in which, I have reason to believe the *Chloroon* will be collected in greatest abundance; not only from the observation of Captain DOVETON, mentioned in my Letter of April 26th, but likewise that Mr. Turing, head Surgeon at Masulipatam, writes me, some Labourers I had employed last year to collect the Grass Egg, promise to bring him a considerable quantity, as soon as the grass springs up after the rains.

Colonel WARD too at Bimlipatam, a Dutch Settlement on the Coast, as well as Major TRENT commanding Condapilly on the bank of the Kistna, are employed in this collection; whereby I have no doubt of being able to supply the Artists in Europe with enough to make every experiment that may be necessary to ascertain its qualities, and to send it from hence by the Month of December or January.

It

It may however be useful to premise, that the colour is much affected by any mode of killing the insect by fire, and it would be of consequence to try some other method.

On an excursion I lately made as far as Sadras, I was shewn a *Dictionnaire Economique* by COUNT BYLAND, published at Amsterdam in the Year 1732 where under the head *COCHINEal* it is said, they are killed in cold water—*eau froide*.

Should the water not be found cold enough for this purpose, it may be put into a porous earthen vessel, and placed out of doors during the night, where if the land-wind blows, although the Thermometer stood in the water, when it was first set out, at 72° , it will fall by Sun rise in the morning to 64° , from some of its heat being carried off in the evaporation from the moist surface of the vessel agreeable to long established practice here, now ingeniously explained by Doctor HAMILTON of Dublin.

If this degree of cold proves insufficient, Salt Petre may be added, as is practised to cool wine, or if a greater degree of cold is found necessary, which is probable while the young are within the covering of the *Chrysalis*, although I have found the dews sufficient to destroy them when exposed.

Let as much *Sal Ammoniac* reduced to powder, as the water first cooled by evaporation will dissolve, be suddenly mixed with it, and the Thermometer will instantly fall as low as 38° and a bottle of water placed in this solution on the mixture of *Sal Ammoniac* will bring the quick-silver in the Thermometer, to 28° , or four degrees below frost.

This being as much cold as can be necessary to kill our insects, I shall only remark it has long been a winter's fire-side amusement in Europe to exhibit great degrees of cold by a mixture of sea salt and snow, the ratio of which Phenomenon is now under the consideration of Doctor BLACK of Edinburgh.

The *Tamul* name of the *Sal Ammoniac* is *Navacharum*, it is sold here in every Market at about Seven Fanams, or Eighteen pence per pound.

The Insect of the *Phyllanthus Emblica*, cultivated on the *Menispermum Cordifolium* has, I now perceive, no other title to be considered a new species of *Coccus*, excepting it's not taking to the *Opuntia* and being *Oviparous*, seeing it appears by farther observation the Fly No. 12 had been described when very young; Those I have lately examined being more properly of a Red than Amber colour, with two milk white hairs as long as the whole insect, at the extremity of the *Abdomen*, in place of the knobs, like the commencement of hairs, mentioned in the former account.

The long Hairs, said by Doctor GARDEN in treating of the Carolina Cochineal, to be situated on the *Rostrum Pectorale*, for spinning a double filament of silk, are very conspicuous on the female, and I have discovered, that the *Apex* of the *Punctum Subulatum* both in this species, and the *Guava* kind is armed with five or six short *Setæ* or Bristles, which there is great probability are Tubes for extracting nourishment from the plant on which they feed, and therefore it will now be understood how this *genus* of insect leaves no mark of gnawing or wounding of the plant it feeds on.

At the same time it must be allowed, the health of a plant is impaired when many insects feed on it, for a leaf of *Opuntia* placed by Baron REICHEL in a glass of water with the *Guava* insect feeding on it, for the purpose of discovering the Male Fly, began to appear yellow, and shew signs of decay in that part to which the insects were attached.

The

The *Menispermum Cordifolium* has a voluble stalk more slender than the *Vitis Vinifera* and it's Fruit is like a Clufter of Scarlet grapes.

The Leaf of this plant on the back or under-side of which the insects feed, when cultivated on rich ground, presents as large a surface as the palm of a mans hand.

The Flower of the female *Menispermum Cordifolium*, which is the kind in question, being a very grateful aromatic, and the plant when supported growing to as great a height as the Vine, renders it very suitable for Arbours, so necessary to intercept the scorching rays of the Sun in this hot climate, to which use I have no doubt those who have gardens will now apply it, especially as it thrives in a dry soil and may be procured from every hedge with little trouble.

I have directed Seeds of the *Jumbo Robinia Mitis* to be sown as well for this purpose as to bring forward the insect mentioned in my Letter of April 26th.

This insect of the *Robinia Mitis* has likewise been found on the tender extremities of the pendant roots of the *Alley Marum*, *Ficus Maximus*, or *Banyan Tree*, and brought me by Mr. WESTON from the banks of the *Pennar*.

Seeing I had carried the culture of the GUAVA insect about the 20th of March as far as it appears the culture of the Carolina insect had been carried, that is to say, to feed them on the *Cactus Opuntia*.

I have sent not only to Mr. YOUNG at Ongole, as noticed in my former Letter, leaves of this plant, but likewise to Lieut. MACKENZIE at Neliere, Mr. TURING at Masulipatam, Mr. LENNOX at Madipollum, Mr. ROXBURGH at Samalcota, Doctor RUSSELL at Vizagapatam, Mr. FENNEN and Mr. BINNY at Ganjam, and Colonel KYD at Calcutta—Doctor RUSSELL writes me the horrid storm they lately experienced, destroyed every appearance of vegetation with them excepting in the *Opuntia* plants, which being newly put into the ground have escaped it's rage, and are thriving; I dare say much is to be imputed to his skill and care, for I find much water destroys this plant.

The Phenomena attending this storm, being uncommon in this part of the world, I must so far encroach on your patience as to enumerate such as have been reported to me; seeing an inundation of the Sea sweep'd off, by the lowest accounts I have heard from 2 to 3 thousand of the inhabitants between Coringa and Jaggernaitporam.

The most prevailing opinion is, that a sudden shift of wind from S. E. to N. E. accumulated the waters on the N. side of point Gardawar, of which there is some probability, as it appears the greatest height to which the Sea rose was near that point, by which the current was interrupted and spread over the adjacent low country in proportion to it's vicinity to that point.

Before any accounts of the inundation of the Sea arrived here, however, it was reported the shock of an Earthquake had been felt amongst the hills to the Westward, and on the arrival of Captain HUDDARD from Europe, he related an unusual commotion he had observed in the Bay when off Pondicherry, about the time the inundation happened.

Resuming the subject of my Letter, I must acquaint you I have much expectation from the assistance of Colonel KYD at Calcutta to find the *Cactus Cocbinilifer*, who has, I understand, made a Botanical Garden, and is attempting the introduction of the *Ferula Assafetida* plant into Bengal.

The

The correspondence opened by printing these Letters will be productive of farther information respecting Cochineal insects, the Hon. Mr. Boddam, Governor of Bombay, writes, that when he was at Tillicherry, an insect was discovered at Mangalore. which appeared to be Cochineal; but no one attempted to describe it—Brigadier General COSSIGNY Governor of Pondicherry has done me the favor to send a Copy of this Publication to the Academy at Paris, as well as to the Islands, and I am honored by a promise of his Excellency, that some memoirs written at the Islands on Cochineal insects shall be sent me, as well as the *Cactus Cochinitifer*, in case it should be found in the gardens of his most Christian Majesty; His Excellency Mr. BLACKHAMER Governor of Policat has granted me permission to make use of any Lands dependant on that Establishment I may think proper for the investigation of Cochineal Insects, and, in short, every person I have solicited on the extensive view of establishing the culture, have discovered much urbanity in their communications.

As far as I can observe, the most distinguishing characters of the genus *Coccus* consists in the situation of the Hairs at the extremity of the Abdomen of the male Fly, and structure of the *Rostrium Pectorale* or *Punctum Subulatum* of the female, which very minute circumstances it will be still useful farther to illustrate, when I can procure a more compleat Microscopical apparatus, for although I am credibly informed, a Boy at Malulipatam walks about there with the Buttocks and lower extremities of another Boy pending at his Breast or *Precordia*, of whom many able persons have taken observations that he can cause his little Brother to make water, yet no one as far as I am acquainted have been at pains to distinguish whither this volition is obedient only to the times he makes water himself or a distinct volition as we see the mind possesses over the right and left hand, although this distinction might throw some light on the nature of Nervous power.

I am with esteem,

Dear Sir,

Your very obedient Servant,
JAMES ANDERSON.

Fort St. George
August 1st 1787.

F I N I S.

